

WHAT IS CLAIMED IS:

1 1. A method for controlling a hydraulic system, particularly of a mobile
2 working machine having at least one internal combustion engine driving at least
3 one hydraulic pump with adjustable volumetric displacement whereby:

4 the speed of the internal combustion engine is detected by a
5 metrological instrument;

6 difference in pressure and the volumetric displacement of at least
7 one hydraulic pump with adjustable volumetric displacement is determined by at
8 least one measurement unit;

9 available power from the internal combustion engine is determined
10 from the speed measured;

11 power consumed by each hydraulic pump with adjustable volumetric
12 displacement is determined from the difference in pressure measured, the
13 volumetric displacement, and the speed;

14 so that the volumetric displacement of at least one hydraulic pump
15 with adjustable volumetric displacement is controlled by a control system so that
16 the total power consumed by at least one hydraulic pump with adjustable
17 volumetric displacement is lower than or equal to the power available from the
18 internal combustion engine or the power delivered or is restricted by the pump, if
19 applicable, in the case of energy recovery at the hydraulic pump.

1 2. A method according to Claim 1, wherein the internal combustion
2 engine drives additional hydraulic fixed-displacement pumps and that the power
3 consumed by each of the fixed displacement pumps is approximated from the
4 speed of the drive by calculation and possibly the system pressure measured, and
5 added to the total power consumed.

1 3. A method according to Claim 2, wherein the calculation of the power
2 of the internal combustion engine, the hydraulic pumps with adjustable volumetric
3 displacement, or the hydraulic fixed-displacement pumps, takes place by means of
4 stored effective relationships, particularly in the form of characteristic curves or

5 families of characteristics.

1 4. A method according to Claim 2, wherein if several hydraulic pumps
2 with adjustable volumetric displacement are present, the volumetric displacement
3 of the individual hydraulic pumps is set or limited using stored control
4 relationships, particularly for prioritizing individual hydraulic pumps.

1 5. A method according to Claim 2, wherein at least one input device,
2 particularly an accelerator pedal or a joystick detects a control command from an
3 operator.

1 6. A method according to Claim 5, wherein if several hydraulic pumps
2 with adjustable volumetric displacement are present, the volumetric displacement
3 of these individual hydraulic pumps is adjusted according to the operator's control
4 commands.

1 7. A method according to Claim 2, wherein the control system controls
2 the power delivered or made available by the internal combustion engine by
3 influencing its speed, in addition to adjusting the power consumed by the hydraulic
4 pumps with adjustable volumetric displacement.

1 8. A method according to Claim 2, wherein the power delivered to the
2 internal combustion engine is integrated into the calculation of total power in
3 operating modes in which a hydraulic pump with adjustable volumetric
4 displacement acts as a drive.

1 9. A method according to Claim 1, wherein that in a case in which a
2 hydrodynamic converter is provided for motive transmission, its power
3 consumption, particularly from a stored speed-torque characteristic, will be
4 calculated by the control system and taken into consideration in the total power
5 calculation.

1 10. An electronic control system to implement the method according to
2 Claim 6.

- 1 11. An electronic control system to implement the method according to
- 2 Claim 7.